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Past, present and future of medical education in Ireland

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Abstract

Medical education and training has evolved over the centuries. Ireland has a long history of leading on aspects of training that remain relevant today, focussing on the apprenticeship model coupled with a robust modern medical education framework. The practice of medicine is changing rapidly driven by expanding knowledge, advances in technology and use of artificial intelligence, demographic shifts and the expectations of patients and society. Medical training and education need to adapt to ensure that our current knowledge and future medical workforce is prepared for modern-day patient-centric practice. Ireland has emerged as a world leader in medical device technology, pharmaceutical research and development and social media technology support which offer the opportunity for the future of medical training. Knowledge, emotional intelligence, critical thinking, compassion, resilience and leadership are key attributes to which we as a profession aspire. There is an opportunity to leverage Ireland's global position in technology and finance to train our modern-day medical workforce whilst retaining the attributes of the compassionate practice of the art of medicine. This paper explores the past, present and future of medical education and training in Ireland.

Practice Highlights

- Ireland has a history of leading in medical education.
- Training focusses on the blended apprenticeship model.
- Ireland is now a world leader in medical device technology, pharmaceutical research and social media technology.
- Agility, diversity and flexibility are embedded in the modern day medical training model.
- Compassion and communication remain pivotal to the practice of medicine.

I. INTRODUCTION

Ireland is a small island on the westerly fringe of Europe separated from Great Britain by the Irish Sea and with a population size similar to Singapore. Although Ireland is a small nation, its global impact is large due to the high value we, as a nation, put in educating our population. Ireland now ranks fourth in the world in the UN's Human Development Index, a widely accepted measure of living conditions or quality of life across the globe. Ireland is ranked second to Singapore in reading performance in Organisation for Economic Co-operation and Development (OECD, 2019) rankings. The enrolment of 17-year-olds in Ireland's secondary education system is 99.3%, with well over the OECD average continuing on to tertiary level education. Ireland is a hub for many major pharmaceutical, medical devices and technology companies which has allowed growth in research.

Partnerships between industry and Irish universities facilitate innovation and research in the medical and life sciences sectors. There are six medical schools in the Republic of Ireland, one of which dates from the 17th century and four from the 19th century. Ireland is justly proud of the history and quality of its medical education. This article outlines the past, present and future of undergraduate and postgraduate education in Ireland.

II. THE PAST

Ireland has a long history of being at the forefront of medical education. Many of the Presidents of the Royal College of Physicians of Ireland (RCPI), which was founded in 1654, have played eminent roles in innovation in medical education since the 17th century (Coakley, 1992). Medical education started in Ireland with the appointment of John Stearne as the first professor of

medicine at Trinity College in the 1650s. The School of Anatomy in Trinity College did not open until 1711; however, following its opening, the medical school flourished.

Worldwide, doctors and medical students associate the name of Robert Graves with the disease of the thyroid gland however few are aware of the key role he played in the development of bedside teaching. During the early 19th century, Graves introduced two elements of radical change in medical education: the distribution of the care of patients to senior medical students and the changing of teaching from the lecture room to the bedside of the patient. These fundamental changes in medical education developed the skill of observation and ensured that errors in clinical judgement were corrected on the spot (Coakley, 1992). Graves' method of teaching was adopted in the English-speaking world and continues to this day. Graves constantly exhorted students to spend time on the wards gaining practical experience. Graves appreciated the importance of what is now called continuing professional development by stating that "if a teacher is to maintain the credibility of his students he must keep up with modern advances" (Coakley, 1992, p. 91).

While Graves and his colleague Dr Stokes (the condition Cheyne Stokes respiration bears his name) "were not the first to make use of bedside teaching, they did so consistently and so successfully that it was adopted by clinical teachers elsewhere" (p. 94) according to Professor Daniel Reisman writing in the Medical History of the College of Physicians of Philadelphia in 1921 (Coakley, 1992).

In the late 19th century, the first generation of women doctors found the Irish medical hierarchy to be unusually open-minded with regard to the question of women's admission in contrast to the policy in Great Britain. The Royal College of Physicians of Ireland (previously known as King and Queen's College of Physicians in Ireland) was the first institution in the British Isles to admit women who had taken their studies abroad to their licentiate examinations in 1877 thereby allowing the first registration of female doctors in Great Britain and Ireland. Sophia Jex Blake, a leading campaigner for women's admission to the medical profession from the 1860s, remarked that this decision was "the turning point" in the societal shift to gender equality in medicine as a profession.

III. THE PRESENT

A. Undergraduate Medical Education

Medical education in Ireland is provided by six medical schools. In 2006, the Irish government commissioned a report "Medical Education in Ireland: A New Direction", the Fottrell report (Working Group on Undergraduate Medical Education and Training, 2006), which addressed core issues such as funding, selection criteria for medical school entry and intake numbers, curriculum reform, clinical training and oversight of undergraduate education. The implementation of the report resulted in, 1) expanded and new access routes to medical school with the addition of Graduate Entry Medical programmes in four of the schools, 2) curricular reform with outcomes linked to objectives, content, delivery methodologies, and assessment thereby expanding the methods by which education is delivered in line with international standards, 3) increased funding for faculty and infrastructure, 4) expansion of teaching to primary care facilities and, 5) accreditation of all clinical sites in partnership with Ireland's national health service, the Health Service Executive (HSE).

Admission to medical school for Irish students is highly competitive, with ten applicants for each place. For school leavers, places are awarded on the basis of a combination of marks achieved in their high school exit examination and the recently introduced Health Professions' Aptitude Test Ireland. Graduate entry students must achieve at a minimum upper second class honours primary degree and are then admitted on the basis of performance in the Graduate Medical School Admissions Test. Places at Irish medical schools are highly sought after by international students because of the international reputation for high-quality medical education in Ireland, and the safe, welcoming nature of the country. Students apply through international agents and are offered places based on academic performance, interviews and personal statements.

The Medical Council of Ireland regulates undergraduate medical education in accordance with the World Federation for Medical Education Standards. Irish medical schools have long been recognised for their strengths in providing an excellent grounding in foundational sciences, coupled with high-quality clinical teaching, experiential training and an emphasis on professionalism. Recent decades have seen innovation in the areas of inter-professional learning and team-based practice, research and innovation skills, the humanities in medical education, simulation and other forms of technology-enhanced learning. The universities have established academic units specifically dedicated to medical education and offer masters level qualifications in medical education.

Undergraduate medical education in Ireland shares many challenges with other jurisdictions including the continued provision of high-quality clinical learning environments for placements, supporting students' health and wellbeing, and ensuring that graduates are well prepared for modern-day practice. Irish medical schools have retained the formal observed examination of bedside practice and communication as a significant component of the final year medical examinations.

International partnerships to support medical student exchange programmes are underpinned by memoranda of understanding. These facilitate high-quality research and clinical electives to enhance the student experience and prepare them for future practice in differing healthcare settings.

B. Postgraduate Medical Education

The governance of postgraduate education and training is under the remit of the Royal Colleges which are funded by the HSE to provide training on clinical sites. There are 13 postgraduate training bodies across all domains of practice. The RCPI is the largest training body with 1500 trainees in the specialities of medicine: paediatrics, obstetrics and pathology. Following a year's internship, trainees enter two years of general professional training (residency) followed by a five-year fellowship of speciality training during which many trainees undertake formal research training to the level of MD/PhD. Partnership between the universities and the postgraduate training bodies has led to the establishment of structured training programmes to train academic clinicians such as the Irish Clinical Academic Training Programme.

The tradition of Irish doctors doing part of their training overseas is a well-established practice. Since the 1950s, the well-educated Irish diaspora have emigrated to develop professionally and return to Ireland to contribute their new knowledge and skills to society. Specifically, the Irish healthcare system has benefitted greatly from these medical graduates returning to Ireland bringing not only the expertise of their particular medical speciality but also the benefits gained from the experiences of working in different health systems.

In recent years, the Irish government published two reports on postgraduate medical education and training: "Preparing Ireland's Doctors to Meet the Health Needs of the 21st Century", Buttimer report (Postgraduate Medical Education and Training Group, 2006) and "Strategic Review of Medical Training and Career Structures", McCraith report (Department of Health, 2014). These reports address the global challenges of

doctor recruitment and retention, emerging healthcare needs of the population and the need for medical training and practice to incorporate use of modern-day technologies and fiscal responsibility and stewardship.

IV. THE FUTURE

There are three key elements to consider in the future planning of medical education and training: the modern-day workforce, the patient and the workplace environment. The increased financial challenge from rising healthcare costs is a central consideration for the future of medical education and training. Medical training needs to provide diversity in who we train and what we train doctors for, flexibility in training and work practice, and agility in how we respond to new challenges. We need models of collaboration with the sharing of learning material across borders, avoiding "reinventing the wheel" in a resource-scarce world.

The modern-day workforce is the most educated of all generations. They embrace technology and look for opportunities to innovate. They want a work-life balance that ensures job satisfaction and avoids burnout. The "one size fits all" model of a doctor needs to be "retired" to allow smart young medical professionals to adapt to the needs of the modern-day work patient and work environment. The future will require doctors to leave their comfort zones and work with other professionals outside healthcare. To achieve this, medical training will need to embrace innovation and entrepreneurship, providing doctors with experiential learning in the disciplines of business, science, engineering and law. Ireland is well-positioned to leverage on experiential learning and internships with global pharmaceutical, medical technology and medical device companies, as most of the world's major companies are based in the country. Programmes, such as Bioinnovate Ireland, establish teams of doctors, other healthcare professionals, engineers and business school graduates who partner to identify innovative solutions to healthcare delivery. Health Innovation Hub Ireland brings innovation in and out of the health service and is a partnership between the medical schools and teaching hospitals and is funded by the Irish government through Enterprise Ireland. Initiatives such as this offer a new funding structure through which these companies sponsor applicants. The output from such partnerships will ensure that doctors become skilled innovators who can provide leadership in tackling global health issues such as disparity and inequality in healthcare access and healthcare provision, embedded in a sustainable financial model.

The new generation of doctors wants the option to practice differently. Modern-day society and individuals

have increasing expectations of the healthcare system and their doctors. Doctors need to be effective in managing these expectations through knowledge exchange and communication. The modern-day practice is impacted by external influences, some predictable such as demographic shifts and workforce and resource scarcity; others unpredictable, such as new technological and therapeutic breakthroughs and shifts in global economic power. What is certain is a finite healthcare budget, so cost-consciousness must be built into our training programmes. What is uncertain is how we can deal with the unpredicted nature of quality healthcare provision.

Notes on Contributors

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Declaration of Interest

The authors declare no conflict of interest.

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